## (12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

# (19) World Intellectual Property Organization

International Bureau



# 

## (43) International Publication Date 1 April 2004 (01.04.2004)

**PCT** 

## (10) International Publication Number WO 2004/026073 A3

(51) International Patent Classification7: E21B 23/00

(21) International Application Number:

PCT/US2003/025715

(22) International Filing Date: 18 August 2003 (18.08.2003)

(25) Filing Language:

English

(26) Publication Language:

English

(30) Priority Data: 60/412,187 20 September 2002 (20.09.2002)

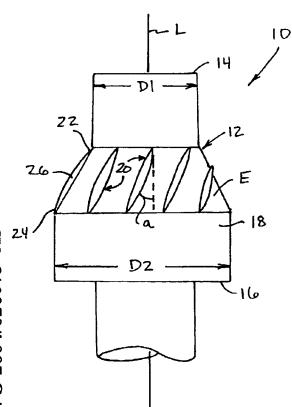
- (71) Applicant (for all designated States except US): ENVEN-TURE GLOBAL TECHNLOGY [US/US]; 16200 A Park Row, Houston, TX 77084 (US).
- (72) Inventors; and
- (75) Inventors/Applicants (for US only): SHUSTER, Mark [US/US]; 19115 Prospect Ridge Lane, Houston, TX

77094 (US). COSTA, Scott [US/US]; 2011 Willow Point, Kingwood, TX 77330 (US). RING, Lev [US/US]; 14126 Heatherhill Place, Houston, TX 77077 (US). KENDZIORA, Larry [US/US]; 6518 Williams School Court, Needville, TX 77461 (US).

- (74) Agent: MATTINGLY, Todd; Haynes and Boone, LLP, 1000 Louisiana, Suite 4300, Houston, TX 77002-5012
- (81) Designated States (national): AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, OM, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW.
- (84) Designated States (regional): ARIPO patent (GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW),

[Continued on next page]

(54) Title: ROTATING MANDREL FOR EXPANDABLE TUBULAR CASING



(57) Abstract: An expansion mandrel (10) for expanding tubular casing includes a tapered expansion portion having expansion segments (20) which are angularly disposed on an external surface of the mandrel (10). The segments (20) reduce friction and cause the mandrel (10) to rotate in response to the mandrel (10) being moved through the casing during expansion of the casing.

WO 2004/026073 A3 ||||||||||||||

## WO 2004/026073 A3



Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PT, RO, SE, SI, SK, TR), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

### Declaration under Rule 4.17:

of inventorship (Rule 4.17(iv)) for US only

#### Published:

with international search report

- before the expiration of the time limit for amending the claims and to be republished in the event of receipt of amendments
- (88) Date of publication of the international search report: 17 June 2004

For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

## **INTERNATIONAL SEARCH REPORT**

International application No.

PCT/US03/25715

		101/0503/25/13	1
A. CLASSIFICATION OF SUBJECT MATTER			
IPC(7) : E21B 23/00			
US CL : 166/207,384			
According to International Patent Classification (IPC) or to both national classification and IPC			
B. FIELDS SEARCHED			
Minimum documentation searched (classification system followed by classification symbols)			
U.S. : 10	56/207,384,206,380		į.
			į.
Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched			
Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)			
·			
C. DOCUMENTS CONSIDERED TO BE RELEVANT			
Category *	Citation of document, with indication, where ap	propriate, of the relevant passages	Relevant to claim No.
Х	US 6,325,148 A (Trahan et al.) 4 December 2001 (		1-3,6,9,13-15,17,20
	10-35.		1 0, ,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,
X,P	US 6,457,532 A (Simpson) 1 October 2002 (01.10.2002), Figs. 20, 22 24, and col. 12,		
	line 27- col. 14, line 9.		1-7,13-17,19
Y,P	This 27 cost 14, and 7.		8,10-12,18,21-22
1,1			0,10-12,10,21-22
<b>3</b> /	VIO 1 503 010 4 (0 1) 04 4 1 4006 (0.1.00	100C) To at 1	1
X	US 1,597,212 A (Spengler) 24 August 1926, (24.08.1926), Entire document, particularly		1-5,13-16
	Figure 1.		
Y			8,18
			1
Y,P	US Patent Application Publication 2003/0075338 (Sivley), 24 April 2003 (24.04.2003), 10-12,21,22		
	Fig. 10 and paragraph 0118 on pages 9-10.		1
X	US 3,039,530 A (Condra) 19 June 1962 (19.06.196	1-3,6,9	
			1
			]
			1
			1
			1
$\Box$			
Further documents are listed in the continuation of Box C. See patent family annex.			
Special categories of cited documents:     "I" later document published after the international filing date or			
priority date and not in conflict with the application but cited to			
"A" document defining the general state of the art which is not considered to understand the principle or theory underlying the invention be of particular relevance			
"X" document of particular relevance; the claimed invention earnot be			
	plication or patent published on or after the international filing	considered novel or cannot be consi	dered to involve an inventive
date step when the document is taken alone			
"L" document which may throw doubts on priority claim(s) or which is cited "Y" document of particular relevance; the claimed invention cannot be			
to establi	ish the publication date of another citation or other special reason	considered to involve an inventive a	tep when the document is
(as speci	fied)	combined with one or more other su	
"O" documen	"O" document referring to an oral disclosure, use, exhibition or other means		
"&" document m		"&" document member of the same pater	it family
"P" document published prior to the international filing date but later than the			
Date of the actual completion of the international search Date of mailing of the international search report			
04 March 2004 (04.03.2004) 09 APR 2004			
Name and mailing address of the ISA/US  Application Ap			
	il Stop PCT, Attn: ISA/US	H. XCMITERSIA	•
Commissioner for Patents / Learnell - /			
P.O. Box 1450 Alexandria, Virginia 22313-1450 Telephone No. 703-308-1113			
Facsimile No. (703)305-3230			

Form PCT/ISA/210 (second sheet) (July 1998)